

1. A method for automatic digital audio mixing of at least two digital audio files, comprising:

reading at least two said digital audio files;

5 determining a scale factor for each of said digital audio files;

applying said scale factor to each of said digital audio files respectively;

and

combining each of said digital audio files into a single digital audio output file.

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2. The method of claim 1, wherein said method is performed within a server device operatively coupled over a network to a client device.

3. The method of claim 2, further including receiving one of said at least two  
15 digital audio files from a user.

4. A method for automatic digital audio mixing of at least two digital audio files, comprising:

20 reading at least two said digital audio files;

preprocessing at least one of said two digital audio files to generate at least one pre-processed digital audio file;

determining a scale factor for each said pre-processed digital audio file;

applying said scale factor to each said pre-processed digital audio files to produce scaled digital audio files; and

combining said scaled digital audio files into a single digital audio file.

5     5.     The method of claim 4, wherein said method is performed within a server device operatively coupled over a network to a client device.

6.     The method of claim 5, further including receiving one of said at least two digital audio files from a user.

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7.     The method of claim 4, wherein said pre-processing comprises adding reverb to at least one of said digital audio files.

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8.     The method of claim 4, wherein said pre-processing comprises applying audio compression to at least one of said digital audio files.

9.     The method of claim 4, wherein said pre-processing comprises applying stereo imaging to at least one of said digital audio files.

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10.    The method of claim 4, wherein said pre-processing comprises applying equalization to at least one of said digital audio files.

11.    The method of claim 4, wherein said pre-processing comprises applying pitch correction to at least one of said digital audio files.

12. The method of claim 4, wherein at least one of said digital audio files having a compressed format is expanded into a file having an uncompressed format.

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13. The method of claim 4, wherein determining said scale factors comprises determining a peak absolute value for each of said digital audio files.

14. The method of claim 13, wherein determining said scale factors further  
10 comprises determining a root mean square for each of said digital audio files.

15. The method of claim 14, wherein determination of said scale factors for  $N$  number of digital audio files, wherein  $N$  represents the number of audio files,  $\beta_i$  represents a known constant value for each said digital audio file,  $P_i$  represents a  
15 calculated peak absolute value for each said digital audio file,  $R_i$  is a calculated root mean square value for each said digital audio file,  $K$  is a known constant,  $S_i$  represents the calculated scale factor for each said digital audio file and  $i$  takes on an integer value from 1 to  $N$ , said scale factors being determined by the following equation,

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$$\begin{bmatrix} P_1 & P_2 & P_3 & \dots & P_1 & \dots & P_N \\ \beta_1 R_1 & -\beta_2 R_2 & 0 & \dots & 0 & \dots & 0 \\ \beta_1 R_1 & 0 & -\beta_3 R_3 & \dots & 0 & \dots & 0 \\ \dots & \dots & \dots & \dots & 0 & \dots & \dots \\ \beta_1 R_1 & 0 & 0 & 0 & -\beta_1 R_1 & 0 & 0 \\ \dots & \dots & \dots & \dots & 0 & \dots & \dots \\ \beta_1 R_1 & 0 & 0 & \dots & 0 & \dots & -\beta_N R_N \end{bmatrix} X \begin{bmatrix} S_1 \\ S_2 \\ S_3 \\ \dots \\ S_1 \\ \dots \\ S_N \end{bmatrix} = \begin{bmatrix} K \\ 0 \\ 0 \\ \dots \\ 0 \\ \dots \\ 0 \end{bmatrix}$$

16. A method for automatic digital audio mixing of at least two digital audio files, the method comprising;
- reading a first and a second digital audio file;
- determining characteristics for each said first and second digital audio files;
- modifying each said characteristics of each said first and second digital audio files to generate modified audio file characteristics;
- determining a scale factor for each said first and second digital audio file from said modified audio file characteristics;
- pre-processing at least one of said first and second digital audio files to generate at least one of a first and second processed digital audio files;
- applying said scale factors to each of said first and second pre-processed digital audio files; and
- combining said first scaled, processed digital audio file with said second scaled, pre-processed digital audio file into a single resulting digital audio file.

17. The method of claim 16, wherein said pre-processing comprises applying said scale factors to said first and second modified digital audio files respectively.

18. The method of claim 17, wherein said pre-processing further comprises  
5 adding reverb to at least one of said digital audio files.

19. The method of claim 17, wherein said pre-processing further comprises applying audio compression to at least one of said digital audio files.

10 20. The method of claim 17, wherein said pre-processing further comprises applying stereo imaging to at least one of said digital audio files.

21. The method of claim 17, wherein said pre-processing further comprises applying equalization to at least one of said digital audio files.

15 22. The method of claim 16, wherein at least one of said digital audio files having a compressed format is expanded into a file having an uncompressed format.

20 23. The method of claim 17, wherein determining said scale factors comprises determining a peak absolute value for each of said digital audio files.

24. The method of claim 23, wherein determining said scale factors further comprises determining a root mean square for each of said digital audio files.

25. The method of claim 24, wherein determination of said scale factors for  $N$  number of digital audio files, wherein  $N$  represents the number of audio files,  $\beta_i$  represents a known constant value for each said digital audio file,  $P_i$  represents a  
 5 calculated peak absolute value for each said digital audio file,  $R_i$  is a calculated root mean square value for each said digital audio file,  $K$  is a known constant,  $S_i$  represents the calculated scale factor for each said digital audio file and  $i$  takes on an integer value from 1 to  $N$ , said scale factors being determined by the following equation,

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$$\begin{bmatrix} P_1 & P_2 & P_3 & \dots & P_i & \dots & P_N \\ \beta_1 R_1 & -\beta_2 R_2 & 0 & \dots & 0 & \dots & 0 \\ \beta_1 R_1 & 0 & -\beta_3 R_3 & \dots & 0 & \dots & 0 \\ \dots & \dots & \dots & \dots & 0 & \dots & \dots \\ \beta_1 R_1 & 0 & 0 & 0 & -\beta_i R_i & 0 & 0 \\ \dots & \dots & \dots & \dots & 0 & \dots & \dots \\ \beta_1 R_1 & 0 & 0 & \dots & 0 & \dots & -\beta_N R_N \end{bmatrix} X \begin{bmatrix} S_1 \\ S_2 \\ S_3 \\ \dots \\ S_i \\ \dots \\ S_N \end{bmatrix} = \begin{bmatrix} K \\ 0 \\ 0 \\ \dots \\ 0 \\ \dots \\ 0 \end{bmatrix}$$

26. A method for automatic digital audio mixing of at least two digital audio files, the method comprising:

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reading at least two said digital audio files;

pre-processing at least one of said digital audio files to produce at least one processed digital audio file;

determining a scale factor for each said processed digital audio file and for each said digital audio file, not having been pre-processed;

- 5           applying said scale factor to each said processed digital audio file, to produce a scaled processed digital audio file and to each said digital audio file not having been processed to produce a scaled digital audio file; and

          combining said scaled processed digital audio files and said scaled digital  
10   audio files into a single digital audio file.

27.    The method of claim 26, wherein said pre-processing comprises adding reverb to at least one of said digital audio files.

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28.    The method of claim 26, wherein said pre-processing comprises applying audio compression to at least one of said digital audio files.

29.    The method of claim 26, wherein said pre-processing comprises applying  
20   stereo imaging to at least one of said digital audio files.

30.    The method of claim 26, wherein said pre-processing comprises applying equalization to at least one of said digital audio files.

31. The method of claim 26, wherein said pre-processing comprises applying pitch correction to at least one of said digital audio files.

32. The method of claim 26, wherein at least one of said digital audio files  
5 having a compressed format is expanded into a file having an uncompressed format.

33. The method of claim 26, wherein determining said scale factors comprises determining a peak absolute value for each of said digital audio files.

10 34. The method of claim 33, wherein determining said scale factors further comprises determining a root mean square for each of said digital audio files.

35. The method of claim 34, wherein determination of said scale factors for  $N$   
15 number of digital audio files, wherein  $N$  represents the number of audio files,  $\beta_i$  represents a known constant value for each said digital audio file,  $P_i$  represents a calculated peak absolute value for each said digital audio file,  $R_i$  is a calculated root mean square value for each said digital audio file,  $K$  is a known constant,  $S_i$  represents the calculated scale factor for each said digital audio file and  $i$  takes on  
20 an integer value from 1 to  $N$ , said scale factors being determined by the following equation,



$$\begin{bmatrix} P_1 & P_2 & P_3 & \dots & P_1 & \dots & P_N \\ \beta_1 R_1 & -\beta_2 R_2 & 0 & \dots & 0 & \dots & 0 \\ \beta_1 R_1 & 0 & -\beta_3 R_3 & \dots & 0 & \dots & 0 \\ \dots & \dots & \dots & \dots & 0 & \dots & \dots \\ \beta_1 R_1 & 0 & 0 & 0 & -\beta_1 R_1 & 0 & 0 \\ \dots & \dots & \dots & \dots & 0 & \dots & \dots \\ \beta_1 R_1 & 0 & 0 & \dots & 0 & \dots & -\beta_N R_N \end{bmatrix} X \begin{bmatrix} S_1 \\ S_2 \\ S_3 \\ \dots \\ S_i \\ \dots \\ S_N \end{bmatrix} = \begin{bmatrix} K \\ 0 \\ 0 \\ \dots \\ 0 \\ \dots \\ 0 \end{bmatrix}$$

36. An apparatus for automatic digital audio mixing of at least two digital audio files, said apparatus comprising:

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a means for reading at least two said digital audio files;

a means for determining a scale factor for each of said digital audio files;

a means for applying said scale factor to each of said digital audio files

respectively; and

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a means for combining each of said digital audio files into a single digital audio output file.

37. The apparatus of claim 36, wherein said method is performed within a server device operatively coupled over a network to a client device.

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38. The method of claim 37, further including receiving one of said at least two digital audio files from a user.

39. An apparatus for automatic digital audio mixing of at least two digital audio files, said apparatus comprising:

- a means for reading at least two said digital audio files;
- 5 a means for preprocessing at least one of said two digital audio files to generate at least one pre-processed digital audio file;
- a means for determining a scale factor for each said pre-processed digital audio file;
- a means for applying said scale factor to each said pre-processed digital
- 10 audio files to produce scaled digital audio files; and
- a means for combining said scaled digital audio files into a single digital audio file.

40. The apparatus of claim 39, wherein said method is performed within a  
15 server device operatively coupled over a network to a client device.

41. The method of claim 40, further including receiving one of said at least two digital audio files from a user.

20 42. The apparatus of claim 39, wherein said pre-processing comprises adding reverb to at least one of said digital audio files.

43. The apparatus of claim 39, wherein said pre-processing comprises applying audio compression to at least one of said digital audio files.

44. The apparatus of claim 39, wherein said pre-processing comprises applying stereo imaging to at least one of said digital audio files.

5 45. The apparatus of claim 39, wherein said pre-processing comprises applying equalization to at least one of said digital audio files.

46. The apparatus of claim 39, wherein said pre-processing comprises applying pitch correction to at least one of said digital audio files.

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47. The apparatus of claim 39, wherein at least one of said digital audio files having a compressed format is expanded into a file having an uncompressed format.

15 48. The apparatus of claim 39, wherein determining said scale factors comprises determining a peak absolute value for each of said digital audio files.

49. The apparatus of claim 48, wherein determining said scale factors further comprises determining a root mean square for each of said digital audio files.

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50. The apparatus of claim 49, wherein determination of said scale factors for  $N$  number of digital audio files, wherein  $N$  represents the number of audio files,  $\beta_i$  represents a known constant value for each said digital audio file,  $P_i$  represents a calculated peak absolute value for each said digital audio file,  $R_i$  is a calculated

root mean square value for each said digital audio file,  $K$  is a known constant,  $S_i$  represents the calculated scale factor for each said digital audio file and  $i$  takes on an integer value from 1 to  $N$ , said scale factors being determined by the following equation,

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$$\begin{bmatrix} P_1 & P_2 & P_3 & \dots & P_1 & \dots & P_N \\ \beta_1 R_1 & -\beta_2 R_2 & 0 & \dots & 0 & \dots & 0 \\ \beta_1 R_1 & 0 & -\beta_3 R_3 & \dots & 0 & \dots & 0 \\ \dots & \dots & \dots & \dots & 0 & \dots & \dots \\ \beta_1 R_1 & 0 & 0 & 0 & -\beta_1 R_1 & 0 & 0 \\ \dots & \dots & \dots & \dots & 0 & \dots & \dots \\ \beta_1 R_1 & 0 & 0 & \dots & 0 & \dots & -\beta_N R_N \end{bmatrix} X \begin{bmatrix} S_1 \\ S_2 \\ S_3 \\ \dots \\ S_i \\ \dots \\ S_N \end{bmatrix} = \begin{bmatrix} K \\ 0 \\ 0 \\ \dots \\ 0 \\ \dots \\ 0 \end{bmatrix}$$

51. An apparatus for automatic digital audio mixing of at least two digital audio files, the method comprising;

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a means for reading a first and a second digital audio file;

a means for determining characteristics for each said first and second digital audio files;

a means for modifying each said characteristics of each said first and

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second digital audio files to generate modified audio file characteristics;

a means for determining a scale factor for each said first and second digital audio file from said modified audio file characteristics;

a means for pre-processing at least one of said first and second digital audio files to generate at least one of a first and second processed digital audio files;

a means for applying said scale factors to each of said first and second pre-processed digital audio files; and

a means for combining said first scaled, processed digital audio file with said second scaled, pre-processed digital audio file into a single resulting digital  
5 audio file.

52. The apparatus of claim 51, wherein said pre-processing comprises applying said scale factors to said first and second modified digital audio files respectively.

10 53. The apparatus of claim 52, wherein said pre-processing further comprises adding reverb to at least one of said digital audio files.

54. The apparatus of claim 52, wherein said pre-processing further comprises applying audio compression to at least one of said digital audio files.

15 55. The apparatus of claim 52, wherein said pre-processing further comprises applying stereo imaging to at least one of said digital audio files.

56. The apparatus of claim 52, wherein said pre-processing further comprises  
20 applying equalization to at least one of said digital audio files.

57. The apparatus of claim 51, wherein at least one of said digital audio files having a compressed format is expanded into a file having an uncompressed format.

58. The apparatus of claim 52, wherein determining said scale factors comprises determining a peak absolute value for each of said digital audio files.

5 59. The apparatus of claim 58, wherein determining said scale factors further comprises determining a root mean square for each of said digital audio files.

60. The apparatus of claim 59, wherein determination of said scale factors for  $N$  number of digital audio files, wherein  $N$  represents the number of audio files,  $\beta_i$  represents a known constant value for each said digital audio file,  $P_i$  represents a calculated peak absolute value for each said digital audio file,  $R_i$  is a calculated root mean square value for each said digital audio file,  $K$  is a known constant,  $S_i$  represents the calculated scale factor for each said digital audio file and  $i$  takes on an integer value from 1 to  $N$ , said scale factors being determined by the following equation,

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$$\begin{bmatrix} P_1 & P_2 & P_3 & \dots & P_i & \dots & P_N \\ \beta_1 R_1 & -\beta_2 R_2 & 0 & \dots & 0 & \dots & 0 \\ \beta_1 R_1 & 0 & -\beta_3 R_3 & \dots & 0 & \dots & 0 \\ \dots & \dots & \dots & \dots & 0 & \dots & \dots \\ \beta_1 R_1 & 0 & 0 & 0 & -\beta_i R_i & 0 & 0 \\ \dots & \dots & \dots & \dots & 0 & \dots & \dots \\ \beta_1 R_1 & 0 & 0 & \dots & 0 & \dots & -\beta_N R_N \end{bmatrix} X \begin{bmatrix} S_1 \\ S_2 \\ S_3 \\ \dots \\ S_i \\ \dots \\ S_N \end{bmatrix} = \begin{bmatrix} K \\ 0 \\ 0 \\ \dots \\ 0 \\ \dots \\ 0 \end{bmatrix}$$

61. An apparatus for automatic digital audio mixing of at least two digital audio files, the method comprising:

a means for reading at least two said digital audio files;

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a means for pre-processing at least one of said digital audio files to produce at least one processed digital audio file;

a means for determining a scale factor for each said processed digital audio  
10 file and for each said digital audio file, not having been pre-processed;

a means for applying said scale factor to each said processed digital audio  
file, to produce a scaled processed digital audio file and to each said digital audio  
file not having been processed to produce a scaled digital audio file; and

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a means for combining said scaled processed digital audio files and said  
scaled digital audio files into a single digital audio file.

20 62. The apparatus of claim 61, wherein said pre-processing comprises adding  
reverb to at least one of said digital audio files.

63. The apparatus of claim 61, wherein said pre-processing comprises applying  
audio compression to at least one of said digital audio files.

64. The apparatus of claim 61, wherein said pre-processing comprises applying stereo imaging to at least one of said digital audio files.

5 65. The apparatus of claim 61, wherein said pre-processing comprises applying equalization to at least one of said digital audio files.

66. The apparatus of claim 61, wherein said pre-processing comprises applying pitch correction to at least one of said digital audio files.

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67. The apparatus of claim 61, wherein at least one of said digital audio files having a compressed format is expanded into a file having an uncompressed format.

15 68. The apparatus of claim 61, wherein determining said scale factors comprises determining a peak absolute value for each of said digital audio files.

69. The apparatus of claim 68, wherein determining said scale factors further comprises determining a root mean square for each of said digital audio files.

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70. The apparatus of claim 69, wherein determination of said scale factors for  $N$  number of digital audio files, wherein  $N$  represents the number of audio files,  $\beta_i$  represents a known constant value for each said digital audio file,  $P_i$  represents a calculated peak absolute value for each said digital audio file,  $R_i$  is a calculated



root mean square value for each said digital audio file,  $K$  is a known constant,  $S_i$  represents the calculated scale factor for each said digital audio file and  $i$  takes on an integer value from 1 to  $N$ , said scale factors being determined by the following equation,

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$$\begin{bmatrix} P_1 & P_2 & P_3 & \dots & P_i & \dots & P_N \\ \beta_1 R_1 & -\beta_2 R_2 & 0 & \dots & 0 & \dots & 0 \\ \beta_1 R_1 & 0 & -\beta_3 R_3 & \dots & 0 & \dots & 0 \\ \dots & \dots & \dots & \dots & 0 & \dots & \dots \\ \beta_1 R_1 & 0 & 0 & 0 & -\beta_i R_i & 0 & 0 \\ \dots & \dots & \dots & \dots & 0 & \dots & \dots \\ \beta_1 R_1 & 0 & 0 & \dots & 0 & \dots & -\beta_N R_N \end{bmatrix} X \begin{bmatrix} S_1 \\ S_2 \\ S_3 \\ \dots \\ S_i \\ \dots \\ S_N \end{bmatrix} = \begin{bmatrix} K \\ 0 \\ 0 \\ \dots \\ 0 \\ \dots \\ 0 \end{bmatrix}$$

71. A program storage device readable by a machine, tangibly embodying a program

10 of instructions executable by the machine to perform a method for automatic digital audio mixing of at least two digital audio files, said method comprising:

reading at least two said digital audio files;

determining a scale factor for each of said digital audio files;

15 applying said scale factor to each of said digital audio files respectively;

and

combining each of said digital audio files into a single digital audio output

file.

72. The method of claim 71, wherein said method is performed within a server device operatively coupled over a network to a client device.

5 73. The method of claim 72, further including receiving one of said at least two digital audio files from a user.

74. A program storage device readable by a machine, tangibly embodying a program

10 of instructions executable by the machine to perform a method for automatic digital audio mixing of at least two digital audio files, comprising:

reading at least two said digital audio files;

preprocessing at least one of said two digital audio files to generate at least

15 one pre-processed digital audio file;

determining a scale factor for each said pre-processed digital audio file;

applying said scale factor to each said pre-processed digital audio files to produce scaled digital audio files; and

combining said scaled digital audio files into a single digital audio file.

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75. The method of claim 74, wherein said method is performed within a server device operatively coupled over a network to a client device.

76. The method of claim 75, further including receiving one of said at least two digital audio files from a user.

77. The method of claim 74, wherein said pre-processing comprises adding  
5 reverb to at least one of said digital audio files.

78. The method of claim 74, wherein said pre-processing comprises applying audio compression to at least one of said digital audio files.

10 79. The method of claim 74, wherein said pre-processing comprises applying stereo imaging to at least one of said digital audio files.

80. The method of claim 74, wherein said pre-processing comprises applying equalization to at least one of said digital audio files.

15 81. The method of claim 74, wherein said pre-processing comprises applying pitch correction to at least one of said digital audio files.

82. The method of claim 74, wherein at least one of said digital audio files  
20 having a compressed format is expanded into a file having an uncompressed format.

83. The method of claim 74, wherein determining said scale factors comprises determining a peak absolute value for each of said digital audio files.

84. The method of claim 83, wherein determining said scale factors further comprises determining a root mean square for each of said digital audio files.

- 5 85. The method of claim 84, wherein determination of said scale factors for  $N$  number of digital audio files, wherein  $N$  represents the number of audio files,  $\beta_i$  represents a known constant value for each said digital audio file,  $P_i$  represents a calculated peak absolute value for each said digital audio file,  $R_i$  is a calculated root mean square value for each said digital audio file,  $K$  is a known constant,  $S_i$
- 10 represents the calculated scale factor for each said digital audio file and  $i$  takes on an integer value from 1 to  $N$ , said scale factors being determined by the following equation,

$$\begin{bmatrix} P_1 & P_2 & P_3 & \dots & P_1 & \dots & P_N \\ \beta_1 R_1 & -\beta_2 R_2 & 0 & \dots & 0 & \dots & 0 \\ \beta_1 R_1 & 0 & -\beta_3 R_3 & \dots & 0 & \dots & 0 \\ \dots & \dots & \dots & \dots & 0 & \dots & \dots \\ \beta_1 R_1 & 0 & 0 & 0 & -\beta_i R_i & 0 & 0 \\ \dots & \dots & \dots & \dots & 0 & \dots & \dots \\ \beta_1 R_1 & 0 & 0 & \dots & 0 & \dots & -\beta_N R_N \end{bmatrix} X \begin{bmatrix} S_1 \\ S_2 \\ S_3 \\ \dots \\ S_i \\ \dots \\ S_N \end{bmatrix} = \begin{bmatrix} K \\ 0 \\ 0 \\ \dots \\ 0 \\ \dots \\ 0 \end{bmatrix}$$

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86. A program storage device readable by a machine, tangibly embodying a program

of instructions executable by the machine to perform a method for automatic

digital audio mixing of at least two digital audio files, the method comprising;

reading a first and a second digital audio file;

5 determining characteristics for each said first and second digital audio files;

modifying each said characteristics of each said first and second digital  
audio files to generate modified audio file characteristics;

determining a scale factor for each said first and second digital audio file  
from said modified audio file characteristics;

10 pre-processing at least one of said first and second digital audio files to  
generate at least one of a first and second processed digital audio files;

applying said scale factors to each of said first and second pre-processed  
digital audio files; and

combining said first scaled, processed digital audio file with said second  
15 scaled, pre-processed digital audio file into a single resulting digital audio file.

87. The method of claim 86, wherein said pre-processing comprises applying  
said scale factors to said first and second modified digital audio files respectively.

20 88. The method of claim 87, wherein said pre-processing further comprises  
adding reverb to at least one of said digital audio files.

89. The method of claim 87, wherein said pre-processing further comprises applying audio compression to at least one of said digital audio files.

90. The method of claim 87, wherein said pre-processing further comprises  
5 applying stereo imaging to at least one of said digital audio files.

91. The method of claim 87, wherein said pre-processing further comprises applying equalization to at least one of said digital audio files.

10 92. The method of claim 86, wherein at least one of said digital audio files having a compressed format is expanded into a file having an uncompressed format.

93. The method of claim 87, wherein determining said scale factors comprises  
15 determining a peak absolute value for each of said digital audio files.

94. The method of claim 93, wherein determining said scale factors further comprises determining a root mean square for each of said digital audio files.

20 95. The method of claim 94, wherein determination of said scale factors for  $N$  number of digital audio files, wherein  $N$  represents the number of audio files,  $\beta_i$  represents a known constant value for each said digital audio file,  $P_i$  represents a calculated peak absolute value for each said digital audio file,  $R_i$  is a calculated root mean square value for each said digital audio file,  $K$  is a known constant,  $S_i$

represents the calculated scale factor for each said digital audio file and  $i$  takes on an integer value from  $1$  to  $N$ , said scale factors being determined by the following equation,

$$\begin{bmatrix} P_1 & P_2 & P_3 & \dots & P_i & \dots & P_N \\ \beta_1 R_1 & -\beta_2 R_2 & 0 & \dots & 0 & \dots & 0 \\ \beta_1 R_1 & 0 & -\beta_3 R_3 & \dots & 0 & \dots & 0 \\ \dots & \dots & \dots & \dots & 0 & \dots & \dots \\ \beta_1 R_1 & 0 & 0 & 0 & -\beta_i R_i & 0 & 0 \\ \dots & \dots & \dots & \dots & 0 & \dots & \dots \\ \beta_1 R_1 & 0 & 0 & \dots & 0 & \dots & -\beta_N R_N \end{bmatrix} X \begin{bmatrix} S_1 \\ S_2 \\ S_3 \\ \dots \\ S_i \\ \dots \\ S_N \end{bmatrix} = \begin{bmatrix} K \\ 0 \\ 0 \\ \dots \\ 0 \\ \dots \\ 0 \end{bmatrix}$$

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96. A program storage device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform a method for automatic digital audio mixing of at least two digital audio files, the method

10 comprising:

reading at least two said digital audio files;

pre-processing at least one of said digital audio files to produce at least one processed digital audio file;

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determining a scale factor for each said processed digital audio file and for each said digital audio file, not having been pre-processed;

applying said scale factor to each said processed digital audio file, to produce a scaled processed digital audio file and to each said digital audio file not having been processed to produce a scaled digital audio file; and

- 5 combining said scaled processed digital audio files and said scaled digital audio files into a single digital audio file.

97. The method of claim 96, wherein said pre-processing comprises adding  
10 reverb to at least one of said digital audio files.

98. The method of claim 96, wherein said pre-processing comprises applying audio compression to at least one of said digital audio files.

15 99. The method of claim 96, wherein said pre-processing comprises applying stereo imaging to at least one of said digital audio files.

100. The method of claim 96, wherein said pre-processing comprises applying equalization to at least one of said digital audio files.

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101. The method of claim 96, wherein said pre-processing comprises applying pitch correction to at least one of said digital audio files.



102. The method of claim 96, wherein at least one of said digital audio files having a compressed format is expanded into a file having an uncompressed format.

5 103. The method of claim 96, wherein determining said scale factors comprises determining a peak absolute value for each of said digital audio files.

104. The method of claim 103, wherein determining said scale factors further comprises determining a root mean square for each of said digital audio files.

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105. The method of claim 104, wherein determination of said scale factors for  $N$  number of digital audio files, wherein  $N$  represents the number of audio files,  $\beta_i$  represents a known constant value for each said digital audio file,  $P_i$  represents a calculated peak absolute value for each said digital audio file,  $R_i$  is a calculated  
15 root mean square value for each said digital audio file,  $K$  is a known constant,  $S_i$  represents the calculated scale factor for each said digital audio file and  $i$  takes on an integer value from 1 to  $N$ , said scale factors being determined by the following equation,

$$\begin{bmatrix}
 P_1 & P_2 & P_3 & \dots & P_1 & \dots & P_N \\
 \beta_1 R_1 & -\beta_2 R_2 & 0 & \dots & 0 & \dots & 0 \\
 \beta_1 R_1 & 0 & -\beta_3 R_3 & \dots & 0 & \dots & 0 \\
 \dots & \dots & \dots & \dots & 0 & \dots & \dots \\
 \beta_1 R_1 & 0 & 0 & 0 & -\beta_i R_i & 0 & 0 \\
 \dots & \dots & \dots & \dots & 0 & \dots & \dots \\
 \beta_1 R_1 & 0 & 0 & \dots & 0 & \dots & -\beta_N R_N
 \end{bmatrix} X \begin{bmatrix} S_1 \\ S_2 \\ S_3 \\ \dots \\ S_i \\ \dots \\ S_N \end{bmatrix} = \begin{bmatrix} K \\ 0 \\ 0 \\ \dots \\ 0 \\ \dots \\ 0 \end{bmatrix}$$